

DETAILED ACTION

This Office Action is in response to the communications received November 4, 2008. Claims 13-28 are under consideration.

Election/Restrictions

Newly submitted claim 28 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The limitation, “a support lens...to support said support lens directly on a marginal part of said sensitive surface of said semiconductor element”, which is directed to an embodiment where only the lens is supported on the sensitive surface. Claims 13-27, which are being considered, are directed to an embodiment which does not have an actual lens directly in contact with the sensitive surface (see lines 8 and 9 of claim 13).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 28 is now withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The newly added claim limitations to claim 13, now results in claims 17-20, 22, 24 and 25 being rejected under 35 U.S.C. 112, first paragraph, as failing to comply with

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the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Therefore, the subject matter not described in the disclosure is the use of either a lens holder or a lens making direct contact with the sensitive surface, but not both at the same time (see Figures 1-5).

Claims 17-20, 22, 24 and 25 (in the case of claim 25, the holder is not near the opening of the circuit carrier, which is of a different embodiment than that of claim 13) are rejected since the use of a lens which makes any sort of contact with the sensitive surface, since all of these claims ultimately depend on claim 13, which has the lens holder making direct contact with the sensitive surface.

Claims 24 and 25 were examined, since the claim language contained an alternate "lens holder" variation.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 13-16, 21, 23-26 are rejected under 35 U.S.C. 103(e) as being unpatentable over Glenn et al. (US 6,734,419).

Regarding Claim 13, Glenn shows in Figure 7, an optical module, comprising:

a circuit carrier [709];

a semiconductor element [711] disposed on said circuit carrier [709], said semiconductor element [711] having an optically sensitive surface [upper surface of 711]; and

a lens unit for projecting electromagnetic radiation onto said semiconductor element [711], said lens unit including a lens holder [703,705A,705B] and at least one optical lens [707A,707B] mounted to said lens holder [703,705A,705B] in a defined position relative to said lens holder [shown];

said lens holder [5] being supported directly [lower surface of 35 contacting 4/9 at 10] on said sensitive surface [10] of said semiconductor element [4/9].

Regarding Claim 14, Glenn shows in Figures 2E and 7, the optical module according to claim 13, wherein said lens unit includes a lens holder [703,705A,705B] supported on said sensitive surface [upper surface of 711] of said semiconductor element [711].

Regarding Claim 15, Glenn shows in Figures 2E and 7, the optical module according to claim 13, which further comprises a frame-shaped area ["aperture" - 14] formed on said lens holder [3], wherein said semiconductor element [4/9] rests on [4/9 "rests on" 3, exactly as how the applicant's orientation is in Figure 1, Losehand's figure

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is just flipped] said frame-shaped area ["aperture" - 14] with said optically sensitive surface [10].

Regarding Claim 16, Glenn shows in Figures 2E and 7, the optical module according to claim 13, which further comprises a frame-type support formed on said lens holder [figure 2 of the current application merely shows the frame type support 32 as the portion of 14 contacting the sensitive surface, which Glenn does show in Figure 2E as the portion of 121,705A which makes contact with the sensitive surface beyond that of the circuit carrier 109B,709], wherein said semiconductor element [111,711] rests on said support [109B,709] with said optically sensitive surface [upper surface of 111,711].

Regarding Claim 21, Glenn shows in Figures 2E and 7, the optical module according to claim 13, wherein:

said lens unit [707A,707B,705A,705B] is disposed on one side [upper side of 709] of said circuit carrier [709] and said semiconductor element [711] is disposed on an opposite side thereof [shown]; and

said circuit carrier [711] is formed with an opening [discontinuity allowing for access to upper surface of 711] allowing electromagnetic radiation to be projected by a lens assembly of said lens unit onto said semiconductor element [shown].

Regarding Claim 23, Glenn shows in Figures 2E and 7, the optical module according to claim 15, wherein said frame-shaped area of said lens holder is:

at least as large [opening of holder, 705A] as said sensitive surface of said semiconductor element [upper surface of 111,711]; and

slightly smaller than an opening [121 goes past 109B, but not completely covering as 705A the sensitive surface] formed in said circuit carrier [709] through which electromagnetic radiation is projected onto said semiconductor element [111,711].

Regarding Claim 24, Glenn shows in Figures 2E, 3 and 7, the optical module according to claim 16, wherein:

said semiconductor element [111] is flip-chip mounted [shown in Figure 2E, 111 is flip chip mounted by 123 on 109B] on said circuit carrier [109B];

said lens holder [121,705A] is formed with a closed frame formed to function as a flow barrier against an underfill material introduced between said semiconductor element and said circuit carrier during a mounting operation of said semiconductor element on said circuit carrier [portion of 121, does not allow under fill 317 of Figure 3, from entering area of sensitive surface area of 111,711].

Regarding Claim 25, Glenn shows in Figures 2E, 3 and 7, the optical module according to claim 16, wherein said lens unit or a lens holder [707A,707B,705A,705B] are connected to said circuit carrier [709] away from an opening formed in said circuit carrier [shown].

Regarding Claim 26, Glenn shows in Figures 2E, 3 and 7, the optical module according to claim 25, wherein said lens unit or said lens holder [707A,707B, 705A,705B] are connected to said circuit carrier by gluing [109B is glued at least in part to 111 by 317].

Claims 13-16 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Losehand et al. (US 2004/0095502).

Regarding Claim 13, Losehand shows in Figure 2, an optical module, comprising:

a circuit carrier [11];

a semiconductor element [4/9] disposed on said circuit carrier [4/9 on 11], said semiconductor element [4/9] having an optically sensitive surface [10, paragraph 0057, "light sensitive sensor 4"]; and

a lens unit for projecting electromagnetic radiation onto said semiconductor element [4/9], said lens unit including a lens holder [5] and at least one optical lens [2/35] mounted to said lens holder [5] in a defined position relative to said lens holder [5 wraps around 2/35];

said lens holder [5] being supported directly [lower surface of 35 contacting 4/9 at 10] on said sensitive surface [10] of said semiconductor element [4/9].

Regarding Claim 14, Losehand shows in Figures 1 and 2, the optical module according to claim 13, wherein said lens unit [2,35] includes a lens holder [3] supported [at left and right edges of 4/9] on said sensitive surface [10] of said semiconductor element [4/9].

Regarding Claim 15, Losehand shows in Figures 1, 2 and 4, the optical module according to claim 13, which further comprises a frame-shaped area ["aperture" - 14] formed on said lens holder [3], wherein said semiconductor element [4/9] rests on [4/9 "rests on" 3, exactly as how the applicant's orientation is in Figure 1, Losehand's figure is just flipped] said frame-shaped area ["aperture" - 14] with said optically sensitive surface [10].

Regarding Claim 16, Losehand shows in Figures 1, 2 and 4, the optical module according to claim 13, which further comprises a frame-type support [region of 3 making contact with 4/9, and also defining the aperture for incoming light] formed on said lens holder [previously discussed portion integrally formed on 3, which is how the applicant's "frame" portion 32 is formed as integral to the "lens holder" 14 in Figure 2 of the drawings], wherein said semiconductor element [4/9] rests on said support [region of 3 making contact with 4/9] with said optically sensitive surface [10].

Regarding Claim 27, Losehand shows in Figure 2, the optical system, comprising an optical module according to claim 13 [see rejection of claim 13 above].

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Fax / Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDUARDO A. RODELA whose telephone number is (571)272-8797. The examiner can normally be reached on M-F, 9:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Davienne Monbleau can be reached on (571) 272-1945. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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